

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-11 (Cancelled).

12. (Currently Amended) A field emission display device comprising:

at least one current emitter formed of a doped silicon; and

a substrate having a phosphor coating in at least one region positioned to receive electrons emitted by said current emitter,

said current emitter comprising a treated current emission surface having a reduced atomic concentration of oxygen resulting from treatment of the current emission surface with a plasma enhanced chemical vapor deposition hydrogenation process in the presence of a silane gas followed by a nitrogen infusion process, said current emitter further comprising sides, at least a portion of said sides being surrounded by an insulating layer to prevent current from radiating out of the sides.

13. (Original) The device according to claim 12, wherein said current emitter resides on a base substrate covered by a barrier film.

14. (Original) The device according to claim 13, wherein said barrier film comprises silicon dioxide.

15. (Previously presented) The device according to claim 13, wherein said current emitter has a base on said barrier layer and a projecting top connected with said base.

16. (Original) The device according to claim 13, wherein a conductive layer is deposited over said barrier film.

17. (Original) The device according to claim 16, wherein said conductive layer comprises aluminum.

18. (Currently Amended) The device according to claim 12, wherein said current emitter comprises ~~sides and a tip, said sides being surrounded by an insulating layer to prevent current from radiating out of the sides,~~ and wherein said sides do not include any portion of the tip.

19. (Original) The device according to claim 18, wherein said insulating layer comprises silicon dioxide.

20. (Original) The device according to claim 18, wherein a silicon grid resides on top of said insulating layer.

21. (Original) The device according to claim 20, wherein a metal layer resides on top of said grid.

22. (Original) The device according to claim 21, wherein a passivation layer resides on top of said metal layer.

23. (Original) The device according to claim 22, wherein said passivation layer comprises nitride.

24. (Previously presented) A field emission display device comprising:

at least one current emitter formed of a doped silicon; and

a substrate having a phosphor coating on at least a portion of the substrate, said coating positioned to receive electrons emitted by the current emitter,

said current emitter comprising a plasma enhanced chemical vapor deposition hydrogenation process-treated and subsequently nitrogen infusion process-treated current emission surface having a reduced concentration of native oxides.

25. (Previously presented) The device according to claim 24, wherein said treated current emission surface has a reduced atomic concentration of oxygen and silicon.

26. (New) A field emission display device comprising:

at least one current emitter formed of a doped silicon; and

a substrate having a phosphor coating in at least one region positioned to receive electrons emitted by said current emitter,

said current emitter comprising a treated current emission surface having a reduced atomic concentration of oxygen resulting from treatment of the current emission surface with a silane gas followed by an ammonia gas.

27. (New) A field emission display device comprising:

at least one current emitter formed of a doped silicon; and

a substrate having a phosphor coating in at least one region positioned to receive electrons emitted by said current emitter,

said current emitter comprising a treated current emission surface having a reduced atomic concentration of oxygen, said treated current emission surface being formed by:

(a) exposing at least a portion of said at least one current emitter to a hydrogenation process; and

(b) exposing at least a portion of said at least one current emitter to a nitrogen infusion process.

28. (New) A field emission display device comprising:

at least one current emitter formed of a doped silicon; and

a substrate having a phosphor coating in at least one region positioned to receive electrons emitted by said current emitter,

said current emitter comprising a treated current emission surface, said treated current emission surface having an oxygen surface atomic concentration smaller than the oxygen surface atomic concentration of the current emission surface subjected to atmospheric conditions.

29. (New) A field emission display device comprising:

at least one current emitter formed of a doped silicon; and

a substrate having a phosphor coating in at least one region positioned to receive electrons emitted by said current emitter,

said current emitter comprising a treated current emission surface, said treated current emission surface having a silicon surface atomic concentration smaller than the silicon surface atomic concentration of the current emission surface subjected to atmospheric conditions.

30. (New) A field emission display device comprising:

at least one current emitter formed of a doped silicon; and

a substrate having a phosphor coating in at least one region positioned to receive electrons emitted by said current emitter,

said current emitter comprising a treated current emission surface, said treated current emission surface having a nitrogen surface atomic concentration greater than the nitrogen surface atomic concentration of the current emission surface subjected to atmospheric conditions.